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Inventors: Fairbanks et al.

Assignee: Crane Plastics Company LLC

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Examiner: Winnie S. Yip

DECLARATION UNDER
37 CFR § 1.132

Group Art

Unit: 3636

Attorney

Docket No.: CPS1540-203L

Title: STRAIGHT FACE
VINYL SIDING

CERTIFICATE OF TRANSMISSION UNDER 37 CFR §1.8 (a)

Date of Transmission: June 27, 2006

I hereby certify that this correspondence is being electronically filed via EFS-Web.

Trisha M. Beachy-Bryant

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The following declaration is in response to the Examiner's Office Action mailed
January 27, 2006.

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Paul J. Mollinger, being duly sworn, deposes and says:

1. I am Vice President of Innovation for Crane Performance Siding, which is located in Columbus, Ohio. Crane Performance Siding is recognized as a leader and innovator in the development of siding products.
2. Crane Performance Siding is a member of the Crane Plastics family of companies (hereinafter collectively referred to as Crane). I have been employed by Crane from about February 1, 2000, to date.
3. Since about mid-2000, I have worked extensively in the development and production of vinyl siding, including the design of vinyl siding and the development of extrusion and other processing techniques for making vinyl siding. As a result, I am intimately familiar with the stages of development of vinyl siding over the years. I am also intimately familiar with the common types of failure associated with the manufacture and installation of conventional vinyl siding.
4. Furthermore, since about mid-2000, I have worked extensively in the ongoing development and production of foam-backed vinyl siding. Crane is widely recognized as a leader in the development of foam-backed vinyl siding. As a result of my extensive experience with foam-backed vinyl siding, I am also intimately familiar with the stages of development of foam-backed vinyl siding and the common types of failure associated with the manufacture and installation of conventional foam-backed vinyl siding.
5. Vinyl siding is typically produced by extrusion. In a typical extrusion process, the vinyl material flows as hot melt through an extruder and into a die. A hot sheet exits the

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die and then typically flows through at least one sizer in order to further refine the shape of the hot sheet. Upon exiting the last sizer, the hot sheet undergoes cooling in an attempt to stabilize the hot sheet.

6. It has been known for some time that a hot sheet of vinyl has an inherent tendency to deform or distort as it is cooled. More particularly, deformation or distortion is the result of unbalanced cooling of the hot sheet of vinyl after it exits the die.

7. A conventional vinyl siding panel is sufficiently thin that it is especially susceptible to deformation. Under typical extrusion speeds and conditions, a conventional vinyl siding panel without any curvature will deform within a mere matter of minutes (if not seconds) as the hot sheet is cooled after exiting a die or sizer. In fact, it is not uncommon for a conventional vinyl siding panel without any curvature to deform within about 5 to 10 seconds after exiting a die or sizer.

8. In addition, a vinyl sheet such as a conventional vinyl siding panel has an inherent tendency to oil can after it is installed on a wall. Oil canning refers to undesired deflection of the surface of a vinyl sheet after it has been installed. More specifically, it is typically characterized by undesired warping or distortion of the surface of a vinyl sheet due to temperature changes or other environmental forces. As a result of the undesired deflection, the vinyl sheet ultimately has a wavy surface and appearance even though it may have initially exited a die or sizer with a straight surface. In other words, the surface of the vinyl sheet will distort or oil can, and it will no longer provide a much-desired straight appearance.

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9. In addition to vinyl shects, other types of plastic sheets also have an inherent tendency to deform and oil can for the same reasons.

10. A straight face, vinyl siding panel is commonly intended to simulate the appearance of conventional straight face, wood lap siding. However, as a result of deformation and oil canning, the industry has not been able to achieve a straight face siding panel. Instead, the face of the siding panel is so wavy and distorted that it does not appear to be straight.

11. In light of my significant experience in the vinyl siding industry, I am of the information and belief that that the industry has not overcome the problems of deformation and oil canning. Simply increasing the thickness of a vinyl siding panel to limit deformation and oil canning is not an option because it is cost prohibitive. Moreover, simply slowing the extrusion speed is not an option since the speed would have to be so slow that it may cause a jam in the processing equipment. Furthermore, even if the extrusion process could be sufficiently slowed, it would be cost prohibitive because of limited output, and the resulting vinyl siding would still be susceptible to oil canning when installed in the field.

12. In attempt to solve the deformation and oil canning problems associated with conventional vinyl siding panels, the industry commonly resorted to introducing a significant concave curvature into each face surface of a vinyl siding panel. A common amount of concave curvature is characterized by at least about 0.130-0.170 inch of surface variance or less than approximately 10-25 inches of radius curvature for a row

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of a siding panel having a width of at least four inches. The significant concave curvature increases the resistance to deformation and oil canning of the vinyl siding panel as compared to a conventional so-called straight face, vinyl siding panel. However, the significant concave curvature is readily visible, and it detracts from the appearance of the vinyl siding panel. A vinyl siding panel having a significant curvature in each face surface does not provide the much-desired appearance of a straight face siding panel.

13. Foam-backed siding does not solve the problem of deformation and oil canning. Crane Performance Siding was a pioneer along with Progressive Foam Technologies, Inc. (hereinafter Progressive Foam), formerly known as ABCO, Inc., in the development of foam-backed siding. In fact, based on information and belief, Crane Performance Siding was the first to commercially introduce foam-backed siding using foam provided by Progressive Foam such that the siding unit has a straight face appearance. Crane Performance Siding was solely responsible for the design and production of the vinyl siding. The same relationship still exists today between Crane Performance Siding and Progressive Foam. Crane Performance Siding provides the vinyl siding, and Progressive Foam provides the foam. Progressive Foam does not make vinyl siding.

14. In light of the relationship between Crane Performance Siding and Progressive Foam, I have worked extensively with Patrick M. Culpepper and Richard M. Wilson, the inventors named on U.S. Patent No. 6,029,415. Patrick M. Culpepper and Richard M. Wilson have never suggested the presently claimed invention to me or Crane

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Performance Siding. Instead, as evidenced by U.S. Patent No. 6,029,415, Patrick M. Culpepper and Richard M. Wilson believed that simply applying foam backing to vinyl siding eliminated the problems of deformation and oil canning. In light of my work with Patrick M. Culpepper and Richard M. Wilson, I am well aware that the teaching of U.S. Patent No. 6,029,415 failed to solve the problems of deformation and oil canning.

15. When foam-backed siding was introduced, much of the industry shifted from vinyl siding having significant concave curvature back to conventional so-called straight face, vinyl siding panels. Following the teaching of U.S. Patent No. 6,029,415, the industry falsely believed that laminating a foam backing panel to a vinyl siding panel eliminated the need to design a concave set (i.e., rows having significant curvature) into the face of the vinyl siding panel in order to resist the effects of deformation and oil canning. U.S. Patent No. 6,029,415 is indicative of this early viewpoint of the industry. In U.S. Patent No. 6,029,415, Patrick M. Culpepper and Richard M. Wilson theorize that simply laminating an insulating board to the vinyl panel enables the use of a flat surface face (i.e., each row has a straight face) to more accurately simulate the appearance wood lap siding.

16. Contrary to the teaching of U.S. Patent No. 6,029,415, simply laminating the vinyl panel to a foam backing panel does not provide the desired resistance to deformation and oil canning. A conventional so-called straight face, vinyl siding panel will still deform after exiting a die or sizer and then oil can when installed despite the presence of the foam backing panel. In particular, the vinyl siding panel will distort

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outwardly because of the lack of concave curvature and the presence of the foam-backing panel. As a result, a conventional so-called straight face, foam-backed, vinyl siding panel does not effectively simulate the appearance of wood lap siding because of the effects of deformation and oil canning. In addition, the oil canning increases the risk of delamination of the siding unit. In fact, as a result of my work with Patrick M. Culpepper and Richard M. Wilson, I have witnessed firsthand oil canning of foam-backed siding as taught by U.S. Patent No. 6,029,415.

17. The presently claimed invention is counterintuitive to the aforementioned attempts to solve the problems of deformation and oil canning. In other words, the inventors have discovered that a siding panel must have a slight curvature in order to achieve the appearance of straight face siding. In particular, the present inventors have discovered the substantial benefits of providing a slight curvature to a row of a siding panel. As set forth in the claimed invention, a slight curvature is characterized by less than about 0.05 inch of surface variance or at least about 85 inches of radius curvature for a row of a siding panel having a width of at least about four inches. The inventors have discovered that providing a slight curvature to a row of a siding panel significantly improves the resistance to deformation and oil canning as compared to a conventional so-called straight face, vinyl siding panel. Moreover, in direct contrast to the significant curvature used by the prior art, the slight curvature of the presently claimed invention is difficult to see with the naked eye. As a result, the slight curvature still enables the siding panel to approximate the appearance of straight face siding when used in

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combination with a suitable foam-backing panel as set forth in the claimed invention. Prior to this invention, based on my extensive experience in this industry, I am of the information and belief that there was never any prior teaching or suggestion of this unique and counterintuitive solution to the problem of providing a straight face vinyl siding panel.

18. The inventors discovered that a siding panel having a slight curvature significantly improves the performance of a foam-backed, vinyl siding panel of the presently claimed invention. In particular, the slight curvature of the vinyl siding panel of the siding unit significantly increases the resistance to oil canning as compared to a conventional foam-backed, so-called straight face vinyl siding panel. Moreover, the slight curvature of the vinyl siding panel enables the resulting siding unit to approximate the appearance of straight face siding. In fact, while the foam backing panel may optionally tend to further straighten out the vinyl siding panel, the built-in slight curvature of the siding panel still substantially increases the resistance to oil canning. Based on information and belief, the industry failed to recognize the substantial benefits that may be obtained by using a vinyl siding panel having a slight curvature in combination with a reinforcement panel (e.g., a foam backing panel) as set forth in the present invention.

19. The references that have been cited at one time or another by the examiner, either alone or in combination, do not teach or suggest the claimed invention. In particular, U.S. Patent No. 6,295,777, U.S. Patent No. 6,195,952, U.S. Patent No. 6,029,415, U.S. Patent No. 4,969,302, U.S. Patent No. 4,649,008, U.S. Patent No.

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4,352,771, International Publication No. WO 00/55446, the Sweet Catalog, and the use of drop-in foam backers (as mentioned in U.S. Patent No. 6,029,415) fail to teach or suggest the presently claimed invention. Individually and collectively, these references fail to teach or suggest the use of a vinyl siding panel having a substantially planar portion of a width of at least about four inches, wherein the substantially planar portion has a slight curvature that is characterized by less than about 0.05 inch of surface variance or at least about 85 inches of radius curvature. In this regard, the lack of teaching or motivation by the aforementioned references is indicative that the references conformed to the common industry practice of either using: 1) a so-called straight panel face without any curvature; or 2) a panel having a curvature characterized by a surface variance that is significantly greater than about 0.05 inch or characterized by a radius curvature significantly less than about 85 inches. As evidenced by the longstanding problem of obtaining a straight face vinyl siding panel that is resistant to oil canning, I am of the information and belief that there was never any prior vinyl siding panel having a substantially planar portion of a width of at least about four inches, wherein the substantially planar portion has a slight curvature that is characterized by less than about 0.05 inch of surface variance or at least about 85 inches of radius curvature. I am also of the information and belief that there was never any prior siding unit comprised of a reinforcement panel secured to a siding panel having a slight curvature as claimed.

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20. In summary, the following chart answers the following question:

**Under which set of conditions in real life can a siding panel be achieved that
visually appears to have a straight face?**

| | CONVENTIONAL SIDING WITH NO CURVATURE | CONVENTIONAL SIDING WITH SIGNIFICANT CURVATURE | CLAIMED SIDING PANEL HAVING A SLIGHT CURVATURE |
|--|--|---|---|
| NO FOAM BACKER | no* | no** | N/A |
| FOAM BACKER WITH SIGNIFICANT CURVATURE | no* | no** | N/A |
| FOAM BACKER WITH CURVATURE THAT MATCHES OR IS LESS THAN THE CURVATURE OF THE SIDING PANEL | no* | no** | YES |

* will deform soon after being extruded or oil can when installed on a wall

** will not provide straight face appearance because of the inherent
curvature of the siding panel

As can be clearly seen in the above chart, only the presently claimed invention provides
a siding panel that may be used in association with a reinforcement panel to provide the

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visual appearance of a straight face under real life conditions. In particular, a vinyl siding panel having a slight curvature as set forth in the presently claimed invention is highly resistant to oil canning when used in association with a reinforcement panel having matching or less curvature, especially as compared to a conventional so-called straight face, foamed-backed vinyl siding panel. Such a use of the presently claimed invention may result in a siding unit that can resist oil canning at temperatures up to or even exceeding 175° F, whereas the bench mark in the industry for foam-backed siding is 123° F.

21. Crane has enjoyed significant commercial success with the claimed invention. I am of the information and belief that the commercial success has led to copying by multiple competitors. In particular, I am of the information and belief that multiple competitors started using the claimed invention without Crane's permission approximately two years after Crane first introduced the claimed invention. The copying by competitors is highly indicative that the claimed invention is an effective solution to the problems of deformation and oil canning.

22. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may

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jeopardize the validity of the above-referenced application or any patent issuing thereon.

6/27/06

Date

Paul J. Mollinger

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